further comprising a reflector (200) situated between the plane of the array and the plane of the lens so as to extend the field of view by reflecting onto the detector array radiation entering the lens from outside the normally imaged field of view of the array-lens combination.

Wirth discloses an optical system that records images that travel through a turbulent atmosphere to a camera on a moving platform designed to sense image distortions in a first segment of the image and to apply a set of correction signals to a segment of a deformable mirror that corresponds to the portion of the image that is detected. Because the lens 105 and the detector array 250 of *Wirth* are arranged at right angles to each other, the lens does not form an image on the array without the mirror 200. The arrangement disclosed in *Wirth* provides a single field of view, and does not provide for a first field of view and a second field of view that extends beyond the first field of view. Therefore, *Wirth* does not teach, show, or suggest a detector array and a lens arranged to define a first field of view of the apparatus and to provide a single focussed image of a distant scene on the array and a reflector arranged between the plane of the array and the plane of the lens to define a second field of view which extends beyond the first field of view and to reflect onto the detector array radiation entering the lens from outside the first field of view, as recited in claim 1. Therefore, Applicant believes that claim 1 and claims dependent therefrom are in condition for allowance, and respectfully request allowance of the same.

With respect to claim 6, the passage in column 2 lines 15-19 of *Wirth* cited by the Examiner does not distinguish between a first field of view and a second field of view. For example, Figure 2 of *Wirth* is only concerned with the field of view produced by the mirror 200. As a result, the reference does not teach, show, or suggest the subject matter of claim 1 including one or more microprocessors or other processors which distinguish events in the second field of view from those in the first field of view by means of appropriate pattern recognition algorithms, as recited in claim 6.

With respect to claim 7, *Wirth* does not disclose a separate source of radiation augmenting the first field of view of the detector array. Thus, the reference does not teach, show, or suggest the subject matter of claim 1 further including a test source of

radiation arranged to emit radiation onto the lens from outside the first field of view of the apparatus, as recited in claim 7 and claims dependent therefrom.

With regards to the remaining rejections, all of the claims in the application, either directly or indirectly, depend from claim 1 or both claims 1 and 7. Because Applicant believes claims 1 and 7 are in condition for allowance, claims 2-5 and 8-28 are also believed to be in condition for allowance. Therefore, allowance of these claims is respectfully requested.

Claims 18, 20-22, and 24-25 further stand rejected under § 103 as being unpatentable over *Wirth* in view of *Wiemeyer*, U.S. Patent No. 5,617,077. The Examiner states that *Wirth* does not disclose a test source comprising means for modulating its output or that the source comprises conventional source elements such as electrically heated filaments. The Examiner further states that *Wirth* teaches the inclusion of a source for signal capture of an extended field of view and that *Wiemeyer* teaches the use of a test source with modulating means producing radiation distinguishable over a field of view. Therefore, the Examiner concludes that it would have been obvious to one having ordinary skill in the art to modify *Wirth* in accordance with *Wiemeyer*.

As discussed above, Applicant believes claim 1 is in condition for allowance. Because claim 1 is a base claim in claims 18, 20-22, and 24-25, Applicant also believes these claims are in condition for allowance. Further, *Wiemeyer* relates to a self-testable photo electric smoke detector and does not relate to a detector array and a lens arranged to define a first and second field of view. As such, Applicant submits that *Wiemeyer* is in a completely different technical field from *Wirth* and is considered non-analogous art. Thus, a person of ordinary skill in the art would not turn to the field of smoke detection in order to solve the problem of testing a linear wavefront sensor camera as shown in *Wirth*. Therefore, allowance of these claims is respectfully requested.

Claim 23 stands rejected under § 103 as being unpatentable over *Wirth* in view of *Rogers*, U.S. Patent No. 6,118,852. Claims 26-28 stand rejected under § 103 as being unpatentable over *Wirth* in view of *Chipper*, U.S. Patent No. 5,852,516.

As discussed above, Applicant believes claim 1 is in condition for allowance. Because claim 1 is a base claim in claims 23 and 26-28, Applicant also believes these claims are in condition for allowance. *Rogers* and *Chipper* do not relate to a detector array and a lens arranged to define a first and second field of view. Therefore, allowance of these claims is respectfully requested.

In conclusion, the references cited by the Examiner, neither alone nor in combination, teach, show, or suggest the apparatus of the present invention. Having addressed all issues set out in the office action, Applicant respectfully submits that the claims are in condition for allowance and respectfully requests that the claims be allowed.

Respectfully submitted,

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APPENDIX

Marked up version showing changes to the Specification:

Please amend the paragraph beginning on page 1 as follows:

The combination of a lens and a detector array is commonly used to give an image of a scene on the array. The scene is imaged on the detector array and the angular extent of the scene that can be imaged is limited by the angular aperture of the lens that gives adequate resolution, and the size of the detector array. Radiation entering more obliquely does not normally fall on the detector array directly and indeed for such rays the imaging capability of the lens may be impaired. This is illustrated in Figure 1 which shows rays from a distant scene falling on a lens 1 and, possibly after passing through a filter 4, form an image on the detector array 2 placed in the focal plane of the lens. Rays such as AA' and BB' give rise to elements of an image of acceptable quality and the detector array may therefore be placed so that it is illuminated by such rays. More oblique rays such as CC' give rise to a distorted image of unacceptable quality for the accuracy of imaging required and fall outside the detector array. Rays incident at angles which give rise to acceptable images are said to be within the normal angular aperture of the lens. More oblique illumination is usually prevented from falling on the array by stops and by blackening the interior of the equipment. An arrangement is described which utilises these oblique rays so that the normal operation of the array is enhanced by some sensitivity to more oblique illumination. These oblique rays could of course be used in combination with a larger detector array covering the area where rays such as CC' approximately converge, but the additional expense of employing a larger detector array and a larger aperture filter may be undesirable. The arrangement to be described can be used [when the lens] <u>to enhance sensitivity,</u> albeit without imaging, outside the portion of the scene which is normally imaged. No such arrangements are required where individual detectors are used to monitor events without imaging, as the angular aperture, for example that determined by a window, can be varied at will, and the question of image quality does not arise.

Please amend the paragraph bridging page 2 and page 3 as follows:

However where an array of detectors is used with a lens to focus an image of the scene on to it, it is desirable to test not only that the window remains clean but also whether each element of the array continues to operate. For this purpose it is necessary to irradiate all the elements (but not necessarily simultaneously) of the detector array from the test source through the window whilst shielding the elements from direct exposure to the [scene on to it, it is desirable to test not only that the window remains clean but also whether each element of the array continues to operate. For this purpose it is necessary to irradiate all the elements (but not necessarily simultaneously) of the detector array from the test source through the window whilst shielding the elements from direct exposure to the] source of radiation. As a lens is used to focus the radiation from the external scene on to the detector array simple arrangements that are used with single detectors cannot be used.

Marked up version showing changes to the claims:

1. (Amended) Radiation detection apparatus capable of detecting and locating events in a scene under surveillance, comprising:

a detector array and a lens arranged to define a first field of view of the apparatus and to provide a single focussed image of a distant scene on the array[, the apparatus further comprising]; and

a reflector [situated] arranged between the plane of the array and the plane of the lens [so as] to define a second field of view which extends beyond the first [extend the] field of view [by reflecting] and to reflect onto the detector array radiation entering the lens from outside the first field of view [normally imaged field of view of the array-lens combination].

2. (Amended) Apparatus as claimed in claim 1 in which the lens is plano-convex and [the] a planar surface of the lens is directed towards the scene.

3. (Amended) Apparatus as claimed in claim 1 in which the reflector has cylindrical symmetry about [the] <u>an</u> optical axis of the lens.

6. (Amended) Apparatus as claimed in claim 1 including one or more microprocessors or other processors which distinguish events in the [extended] <u>second</u> field of view from those in the [normally imaged] <u>first</u> field of view by means of appropriate pattern recognition algorithms.

7. (Amended) Apparatus as claimed in claim 1 including a test source of radiation arranged to emit radiation onto the lens from outside the [normally imaged] <u>first</u> field of view of the [detector array] <u>apparatus</u>.

9. (Amended) Apparatus as claimed in claim 7 [including means] <u>further comprising a shielding member</u> for shielding the detector array from the test source.

10. (Amended) Apparatus as claimed in claim 7, [including a] further <u>comprising a second</u> reflector arranged to reflect radiation from the test source towards the lens.

11. (Amended) Apparatus as claimed in claim 10 in which the [further] <u>second</u> reflector has one or more concave surfaces.

12. (Amended) Apparatus as claimed in claim 10 in which the [further] <u>second</u> reflector is frusto-conical.

13. (Amended) Apparatus as claimed in claim 10 in which the [further] <u>second</u> reflector has one or more planar reflective surfaces.

14. (Amended) Apparatus as claimed in claim 10 in which the [further] <u>second</u> reflector has cylindrical symmetry about the optical axis of the lens.

15. (Amended) Apparatus as claimed in claim 10 in which the reflector and the [further] second reflector are arranged to reflect radiation onto the whole of the detector array.

17. (Amended) Apparatus as claimed in claim 16 in which the [further] second reflector is located outside the window.

18. (Amended) Apparatus as claimed in claim 7 [which] wherein the test source has means for modulating its output, whereby radiation from the test source can be distinguished from radiation from a scene being viewed.